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EXAMINER

NGUYEN, LAM S

ART UNIT

PAPER NUMBER

2853

DATE MAILED: 05/14/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/986,804

Applicant(s)

TSUBOI ET AL.

Examiner

LAM S NGUYEN

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 February 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,3-15,17-29,31-42 and 44-54 is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

- 5) ☐ Claim(s) _____ is/are allowed.

- 6) ☒ Claim(s) 1,3-15,17-29,31-42 and 44-54 is/are rejected.

- 7) ☐ Claim(s) _____ is/are objected to.

- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 November 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s) _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claim 7, 21, 35, and 48 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Referring to claim 7: Because claim 7 depends on claims 1 and 5 and as claimed in claims 1 and 5 that an amount of ink passing through a nozzle is decreased below a normal value during the preliminary ejecting operation performed on a print medium, the IF condition “if said amount of ink decreased below said normal value” in claim 7 is satisfied during the preliminary ejecting operation performed on the print medium. However, as claim 7 claims that if the IF condition “if said amount of ink decreased below said normal value” is satisfied, then the preliminary ejecting operation is performed on an object other than the print medium. Therefore, there exists a conflict in the scope of these claims.

Claims 21, 35, and 48 are rejected with the same above reason.

As the scope the claim cannot be determined, a prior art search and consideration of claim patentability has not been undertaken for these claims.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

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(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

1. Claims 1, 3-6, 8, 10-11, 13-15, 17-20, 22, 24-25, 27-29, 31-34, 36, 38-42, 44-47, 49, 51-54 are rejected under 35 U.S.C. 102(b) as being anticipated by Lund et al. (US 5659342).

Lund et al. disclose an ink jet printing apparatus capable of performing a preliminary ejecting operation that does not contribute to printing (in term of “purging”) (Abstract), said apparatus comprising:

a print head having a nozzle and having a driver (column 2, line 14-16: a corresponding driver for driving the firing of selected nozzles in the purging step) for driving an amount of ink through said nozzle during said preliminary ejecting operation so that said amount of ink or optical density obtained from a pigment concentration of ink through said nozzle **(Referring to claim 15)** varies depending on the length of time during which printing is not executed (column 2, line 41-46: the combination of small nozzles and quick drying ink leaves the printheads susceptible to clogging. This causes the amount of ink (or optical density) ejected through a nozzle varying dependently on the length of time during which printing is not executed),

wherein said preliminary ejecting operation is performed so that an amount of ink passing through said nozzle is decreased below a normal value (column 6, line 52-54: suggesting that decreasing the drop size to improve the ability of hiding of purging drops on the page), except when said print head is disposed at a predetermined position (column 6, line 61-67: suggesting that returning the printhead to a spittoon for handing large amounts of purged ink).

Referring to claims 3, 17, 31, 44: wherein said opportunity corresponds to a first ejection or first and second ejections following a last ejection (column 6, line 60-67).

Referring to claims 4, 18, 32, 45: wherein said opportunity corresponds to an ejection between time when said amount of ink passing through said nozzle starts to decrease below said normal value and time when said amount of ink recovers to said normal value (column 1, line 47-51: spitting is needed when nozzles are partially blocked means that when the amount of ink passing through a nozzle is decreased below a corresponding value).

Referring to claims 5, 19, 33, 46: wherein said preliminary ejecting operation is performed on a print medium (Abstract).

Referring to claims 6, 20, 34, 47: wherein said preliminary ejecting operation is performed on said print medium only if dots formed on said print medium may be unnoticeable compared to a printed image, and wherein said preliminary ejecting operation is performed on an object other than said print medium if dots may be noticeable (column 5, line 1-3, column 7, line 12-15, and column 6, line 58-67).

Referring to claims 8, 22, 36, 49: wherein said preliminary ejecting operation is performed when a predetermined time has elapsed after a last ejection, said predetermined time including time during which said amount of ink passing through said nozzle is decreased significantly (column 5, line 66 to column 6, line 3).

Referring to claims 10, 11, 24, 25, 38, 39, 51, 52: wherein said print head has a plurality of nozzles, and wherein said predetermined time is determined for each of nozzles and wherein said predetermined time for each of said nozzles is corrected using dithering, error diffusions, or random numbers so that a dot pattern formed during said preliminary ejecting operation for said plurality of nozzles is unnoticeable compared to a printed image (column 7, line 12-15).

Referring to claims 13, 27, 40, 53: wherein said print head includes an electrothermal converting element, said print head ejecting ink using thermal energy generated by said electrothermal converting element (column 3, line 31-32).

Referring to claims 14, 28, 41, 54: wherein said print head includes a piezoelectric element, said print head ejecting ink using mechanical energy generated by said piezoelectric element (column 3, line 32-34).

Referring to claim 15: using ink containing a pigment as a color material (column 1, line 35-45).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9, 12, 23, 26, 37, and 50 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lund et al. (US 5659342) in view of Fujii (US 6299277).

Lund et al. disclose the claimed invention as discussed above and also disclose wherein said predetermined time is determined depending on a temperature condition of said printing apparatus (column 5, line 26-35). However, Lund et al. do not disclose that said predetermined time is determined depending on a humidity condition of said printing apparatus, a table used to determine said predetermined time and ejecting numbers for said preliminary ejecting operation, and a control device for controlling said predetermined ejecting operation, said control

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device using said table to perform said predetermined ejecting operation (**Referring to claims 12, 26**).

Fujii discloses that a predetermined time of a recovering process is determined depending on a humidity condition of said printing apparatus (column 3, line 53 to column 4, line 10), a table used to determined said predetermined time and ejecting numbers for said preliminary ejecting operation, and a control device for controlling said predetermined ejecting operation, said control device using said table to perform said predetermined ejecting operation (column 4, line 5-16: a conversion table for converting the relative humidity to the evaporation rate of water from the ink. Based on the evaporation rate, the suitable timing is determined).

Therefore, it would have been obvious for one having ordinary skill in the art at the time the invention was made to include the conversion table for converting the relative humidity to the evaporation rate of water from the ink for determining the predetermined time to perform the recovering operation as disclosed by Fujii into the ink jet printing apparatus as disclosed by Lund et al. The motivation of doing so is to determine suitable timing which fulfills necessary and sufficient conditions in executing the removal of thickened ink adhering the printhead in order to enable the ink jet printer to flexibly cope with changes in the environment as taught by Fujii (column 4, line5-10).

Response to Arguments

Applicant's arguments with respect to claims 1, 15, 29, and 42 have been considered but they are not persuasive.

Regarding to the arguments on page 15-16: The applicants argued that Lund and Fujii refer to the "spitting" of the ejection nozzles, but do not disclose in any way an ejection which is

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decreased from a normal value. However, as indicated above, Lund suggests the decreasing of drop size of the purging drop when spitting of the page and suggests the spitting on the spittoon for a large amount of ink. Therefore, one skill in the art at the time the invention was made would apply this suggestion to eject a smaller amount of ink during the purging operation on the page than the operation on the spittoon in order to improve the ability of hiding the purging drops on the printing page. Also, Lund discloses the decreasing of optical density that relates to the off time of the printer.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to LAM S NGUYEN whose telephone number is (703)305-3342. The examiner can normally be reached on 7:00AM - 3:30PM.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, RUSS ADAMS can be reached on (703)308-2847. The fax phone numbers for the organization where this application or proceeding is assigned are (703)305-3431 for regular communications and (703)305-3432 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703)308-0956.

LN

May 8, 2003



JUDY NGUYEN
PRIMARY EXAMINER